(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 257 982**
A1

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **87307361.3**

(22) Date of filing: **20.08.87**

(51) Int. Cl.[4]: **A 47 G 9/00**

(30) Priority: **22.08.86 US 899535**

(43) Date of publication of application:
02.03.88 Bulletin 88/09

(84) Designated Contracting States:
BE CH DE GB LI SE

(71) Applicant: **SPAN-AMERICA MEDICAL SYSTEMS, INC.**
P.O. Box 5231
Greenville South Carolina 29606 (US)

(72) Inventor: **Schaefer, Daniel J.**
125 Bradley Boulevard
Greenville South Carolina 29609 (US)

Luke, John Kenneth
420 Sweetwater Road
Greer South Carolina 29651 (US)

(74) Representative: **Harvey, David Gareth et al**
Graham Watt & Co. Riverhead
Sevenoaks Kent TN13 2BN (GB)

(54) An improved pillow and construction therefor.

(57) A foam pillow has two opposite main support surfaces (12, 14), one including convolutions (30) together defining a relatively flat profile and the other including longitudinal ribs (22) of arcuate cross-section. The ribbed surface (12) has a curved profile presenting at least two prominent lobes or peaks (16, 18) of differing heights and a central trough (20). The pillow (10) supports a person's head in the trough (20) with the user's neck received on one of the lobes (16 or 18), reversal of the lobes permitting variation in the amount of neck support provided. The ribs (22) comprise rounded ridges and have circular channels (24) separating their bases to dissipate heat and moisture away from the user and the curved support surface (12) may include transverse separations (40) at various intervals in the ribs (22) to provide extra dispersion of pressure.

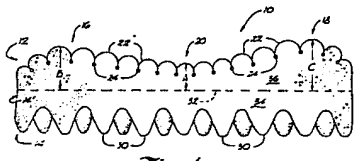

Fig.1

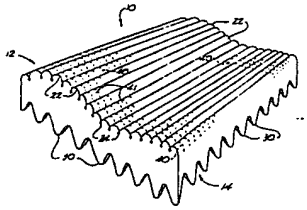

Fig.2

EP 0 257 982 A1

Description

"AN IMPROVED PILLOW AND CONSTRUCTION THEREFOR"

This invention concerns pillows in general, and in particular a foam pillow, with certain longitudinal characteristics and reversible and invertible features, adapted for selective support of a user's head and neck.

Due to the physical attributes of a typical person, the neck of a person reclining in a horizontal position (and without any particular pillow support or the like) becomes an unsupported bridge between the shoulders and head. Such is generally true whether an individual is lying on the back or the side. Without proper head and neck support, muscle strain (particularly in the neck region) is not uncommon. Such strain leads to discomfort and restlessness which can defeat the entire purpose of a person's rest or sleep period.

During rest, individuals commonly recline in a relatively horizontal position with their head and part of their neck variously supported on pillows. Many commercial pillows for either home or hospital use comprise generally rectangular constructions with tapered edges, and are filled with a variety of cushioning materials, such as foam or down.

Often times, a person will "fluff" a pillow before using it. In effect, the pillow is being puffed up so that resting of one's head on the pillow will form a slight cradle, with other portions of the pillow being pushed outward to provide support for the user's neck. The desired affect is quickly lost once the pillow becomes pushed down again (i.e. "unfluffed").

In general recognition of such head and neck support problems, it is known in the prior art to provide various contoured pillow arrangements (particularly for surgical or hospital patients) which differentially support a user's head and neck so that the naturally unsupported region beneath the neck is provided some support. For example, U.S. Design Patent 276,938 to Pedersen and French Patent 1,120,734 by Cabrit et al disclose contoured pillow designs having a profile including at least two raised areas as well as a trough for generally receiving a user's head. The person's head is retained in the trough between the two raised areas, with one of the raised areas supporting the neck region. Pederson and Cabrit both disclose sloped regions adjacent one of the raised areas for also supporting upper shoulder regions; thus, they are intended for a single user orientation only, and do not vary the amount of neck support.

Similarly, Kogan (U.S. Patent 4,218,792) concerns an orthopedic pillow having a cross-sectional profile with a trough for receiving a person's head, surrounded by two raised areas, one of which supports the user's neck region. A convex boss is provided on one side of the pillow for alignment under the nape of the user's neck; thus Kogan has only one intended user orientation, and does not disclose structure to vary the amount of neck support.

While such references represent an advance in the area of supporting a person's head and neck over non-contoured support arrangements, they don't teach variations and modification to provide selected elevations and positions for heads and necks of varying shapes and sizes. Dixon (U.S. Patent 4,320,543) and De Laittre et al (U.S. Patent 3,829,917) disclose various medical and therapeutic contoured support pillows which include features for varying the amount of support of a user's head and neck.

Dixon discloses a pillow providing both vertical and lateral support for surgical purposes. Alternately matable members may be relatively rotated at 90° intervals with respect to each other, for varying the height of a trough through which a user's neck passes for support of the user's head in a roughly cup-shaped arrangement having a convoluted support surface. The pillow provides four-way support of a recumbent user's head to immobilize same for surgical or other medical reasons in a so-called neutral or "sniffing" position, for administering anesthetics or when a patient must undergo treatment in an intensive care unit.

De Laittre discloses a therapeutic pillow which is intended to be aesthetically appealing by providing the appearance of a conventional pillow. Two convex lobes emerge from an underside of the pillow, overhang edges thereof, and merge at a mutually-shared trough. The lobes have a relatively constant diameter from the underside support surface to the shared trough. All four corners of the generally rectangular pillow are pulled inwardly by receipt and support of a user's head centrally thereon. So supported, forces push in on the top of the user's head, while other forces present at the user's neck and bottom of the head push outward to pull and stretch the neck muscles. Such forces are achieved with the integral construction and unitary face of the De Laittre device, in combination with the overhanging convex lobes thereof, which are of different height to provide support for heads and necks of various shapes and sizes.

In general, the foregoing devices, while recognizing the need for selective differential support of a person's head and neck, are generally restrictive in terms of positioning of the head since they are directed to medical or therapeutic applications. Furthermore, they may cause unpleasant cradling forces on a user's head due to lack of independent action for the surface features thereof. All such restrictiveness and unpleasant sensations may be acceptable in the limited use categories of meical or therapeutic needs, but are strongly undersirable for the comfort sought during everyday use such as rest or sleep periods.

Furthermore, none of the foregoing exemplary references combine their concern for differential head and neck support with any particular features thereof directed to other aspects of extended user comfort, such as moisture and heat control. Dixon refers to some air circulation around his convol-

utions, but basically teaches that a user's head should be deeply cradled in a soft support surface to immobilize same. In fact, the rather restrictive cradling of a number of prior art devices, such as the devices of Kogan, De Laittre and Dixon, can contribute to a build-up of heat and moisture around a user's head, instead of dissipating same.

Leeb (U.S. Patent 2,305,173) discloses a generally rectangular headrest having vertical openings which extend perpendicularly from a headrest support surface to internal cavities where medicated vapor vessels are received. Vapors ascend such vertical channels to provide a user with relief from the discomfort of blocked breathing. Such channeling directs vapors towards the support surface, instead of providing dissipation for heat or moisture generated by a user's head and neck resting thereon.

Spann (U.S. Patent 4,573,456) discloses foam body supports, such as a foot splint which surrounds an injured foot, which have a plurality of enlarged air channels parallel to the user's leg for ventilating the enclosed leg or foot. A seat comprising a flat block of foam is also shown with such enlarged air channels.

The present invention recognizes and addresses many of the foregoing drawbacks, as well as others.

The present invention aims to provide a contoured pillow having features directed at differential support of a user's head and neck, the pillow remaining relatively free from imposing any restrictions on movement by the user.

In seeking to provide a contoured pillow having features for differentially supporting a user's head and neck, the invention aims to avoid applying unpleasant forces or pressure on the user. One embodiment of this invention, a contoured pillow, has a plurality of longitudinal features which enable independent action of members defining such features, for reducing or minimizing any unpleasant forces or pressure applied to a user while differentially supporting the head and neck of same.

The present invention also aims to provide a construction which is reversible for varying the relative amounts of differential head and neck support to accommodate a variety of head and neck sizes and shapes, with such construction also including further features in accordance with this invention.

This invention further aims to provide an invertible embodiment, comprising a generally rectangular construction having opposing, relatively planar sides, one of which is substantially flat and the other of which is provided with a predetermined curvature in accordance with other features of this invention. Such rectangular pillow may be inverted from one main planar side to another while still (in either orientation) providing selective, differential support of a user's head and neck.

From another aspect, the present invention aims to provide an improved pillow embodying a number of the foregoing features, while also providing dissipation characteristics for promoting the removal of heat and moisture from the head and neck of a user supported on such pillow. In one exemplary aspect, such dissipation may be achieved by parallel, longitudinal air channels disposed peripendicularly to a given orientation of a user's head and neck supported on such pillow, whereby heat and moisture is efficiently directed by such channels away from the user's head and neck.

In conjunction with such dissipation feature it is a further aim of this invention to provide functionally-independent support ridges, associated in parallel with such dissipation channels, which promote enhanced dissipation at the periphery of a user's head and neck by differentially enlarging radial openings in such channels (thereby increasing the dissipation of heat and moisture through such channels by increasing the volume of airflow therethrough).

The foregoing aims and aspects of the present invention may be variously embodied in numerous features thereof, given collections of which may comprise an exemplary embodiment of a construction in accordance with the present invention. For present purposes of disclosing exemplary embodiments which are illustrative but not limitative of this invention, various particular embodiments are set forth herein.

One such exemplary embodiment includes a pillow for supporting a person's head and neck in a selected disposition, the pillow being constructed essentially of foam materials and comprising: a generally rectangular structure having longitudinal and lateral axes perpendicular to one another, and with the lateral axis being shorter than the longitudinal axis; an upper support surface defined on the structure and having longitudinal features forming a lateral profile, which profile includes two prominent lobes of differing heights and a relative trough therebetween; and a plurality of longitudinal ribs having arcuate cross-sections, formed in the upper support surface and defining the profile thereof.

Another exemplary construction in accordance with features of the present invention is directed to a construction of resilient material for use as a head pillow for a person, comprising: an integral member composed of the resilient material and having an upper support surface of a predetermined profile; a plurality of parallel, spherical ridges formed on the support surface and conforming to the profile thereof; and a plurality of parallel channels, defined by the upper support surface, and respectively interposed between adjacent of the ridges.

Yet another exemplary preferred embodiment incorporating features of the present invention includes a pillow for supporting the head and neck of a person situated in a generally horizontal position, the pillow comprising: a generally planar, rectangular body of resilient material, having two main support surfaces on opposing sides thereof and being invertible between two positions for providing direct support of the head and neck of a user on a selected one of the support surfaces of the body; scalloping in rows, with spherical air channels defined therebetween, disposed on a given one of the support surfaces; and convolutions defined on another one of the support surfaces.

The invention will now be explained in more detail by way of example in the following description which

is to be read in conjunction with the accompanying drawings, in which:

Figure 1 illustrates an end view of an exemplary embodiment constructed in accordance with features of the present invention;

Figures 2 and 3 illustrate perspective views of the two main support surfaces (on opposite sides of the pillow) of the embodiment shown in Figure 1; and

Figure 4 illustrates an end perspective view of an exemplary construction in one preferred manner of use thereof.

Repeat use of reference characters throughout the following specification and drawings is intended to indicate the same or analogous elements or features.

Referring to Figure 1, the end view illustrates the lateral profile of an exemplary foam pillow 10 in accordance with features of the present invention. Pillow 10 includes two main support surfaces 12 and 14, having relatively curved and flat profiles, respectively. Pillow 10 may be inverted so that either surface 12 or 14 is upwardly disposed for receipt and support of a user's head and neck, but it is generally preferred that surface 12 defines an upper support surface, with two prominent lobes or peaks, (or maximums) 16 and 18 and a relative trough or hollow (or minimum) 20 forming the predetermined curved profile thereof. Longitudinal, scalloped ribs 22 conform to such curved profile of upper support surface 12.

Ribs 22 comprise parallel, longitudinal projections extending from and along the main body of pillow 10. Ribs 22 have arcuate cross-sections, and thus comprise a plurality of parallel spherical ridges. Further longitudinal features of upper support surface 12 include a plurality of parallel, generally circular channels 24. Such channels are disposed between each pair of ribs 22, and are actually defined in upper surface 12 along with lower extensions of the radial surfaces of ribs 22. The radial surfaces of adjacent ribs are not joined, but instead are merely in contact with one another. Since pillow 10 is comprised of foam or foam-like material, ribs 22 may be pushed back and separated at any point along their longitudinal length to expose radial openings into circular channels 24. Even without such physical separation, air may diffuse through the porous foam material to reach channels 24. Beneficial effects of such diffusion are discussed in greater detail below, particularly with reference to Figure 4.

In the generally preferred use of pillow 10 wherein surface 12 comprises an upper support surface, surface 14 comprises a lower support surface. Surface 14 includes a plurality of convolutions 30, which are themselves known in the art. The tips of convolutions 30 define a relatively flat profile for lower support surface 14.

While convolutions 30 and ribs 22 may be formed from one integral body of foam comprising pillow 10, they may also respectively be formed on surfaces of two separate bodies of foam 34, 36, joined along a plane shown as dotted line 32. Such two separate members, defined by the indicated portions above and below dotted line 32, may be glued or otherwise attached to one another along dotted line 32 so as to collectively comprise the illustrated pillow 10.

Alternatively, as an optional feature of the present invention, a relatively flat lower support surface 14′ may be provided for a given pillow 10 by using only upper member 36, without attaching lower portion 34. In such instance, the flat lower surface 14′ of upper member 36 literally becomes the lower surface of pillow 10.

Various dimensions may be provided for a given construction in accordance with the present invention. While Figure 1 is not intended as a scale drawing, the following dimensions are exemplary of a given construction. Lower portion 34 of pillow 10 may be about 5 centimeters thick (the distance from dotted line 32 to the tips of convolutions 30). Both lower portion 34 and upper portion 36 comprise rectangles of approximately 40 centimeters lateral width and 52 centimeters longitudinal length. Generally, this corresponds to a pillow size of 16 x 20 inches.

The thickness of upper portion 36 varies across the lateral profile thereof. Its lowest point is generally at minimum 20. Length A, defined by the distance between minimum 20 and dotted line 32, may be approximately 3.5 centimeters. Maximums (or lobes) 16 and 18 have heights greater than minimum 20, but which also differ from one another. For example, distance B may be about 5.5 centimeters while distance C is closer to 7 centimeters. Distances B and C substantially comprise the distances between lobes 16 and 18 and dotted line 32, respectively (as illustrated in Figure 1). Such differential measurements for distances B and C permit the orientation of pillow 10 to be reversed relative a given user, for providing variation in support offered by such pillow (as discussed further below with reference to Figure 4).

As generally illustrated by Figure 1, the diameter of arcuate ribs 22 is preferably smaller around minimum 20 than around maxima 16 and 18. Such diameters may vary over a range, such as 2-3 centimeters. The outer lateral edge portions of pillow 10 also have slopes which descend from lobes 16 and 18 respectively. The diameter of ribs 22 in such lateral edge regions also are preferably smaller than the diameter of ribs located at maxima 16 and 18, and smaller than those leading up to such maximums from central trough 20.

Figures 2 and 3 illustrate perspective views of pillow 10 taken generally from a corner thereof. Figure 2 illustrates curved surface 12 turned upward, and Figure 3 is inverted therefrom and shows the relatively flat profile, convoluted surface 14 disposed upwardly. Dotted line 32 is omitted from both Figures 2 and 3 to indicate that the entire exemplary pillow 10 illustrated therein constitutes a single integral member.

Both figures further illustrate the generally rectangular nature of pillow 10, discussed above in accordance with one set of exemplary measurements for such a pillow in conjunction with the embodiment of Figure 1. Figure 2 also illustrates the longitudinal nature of arcuate ribs 22, which run the full longitudinal length of pillow 10. Also, as under-

stood from the foregoing discussion and the illustration of Figure 1, channels 24 are formed the entire longitudinal length of pillow 10, alternately appearing between each rib thereof.

In addition to longitudinal features of this invention represented by ribs 22 and channels 24, Figure 2 further illustrates optional lateral features concerning separations or cuts 40, formed in curved support surface 12. Such separations or cuts may extend to approximately the depth of the base of ribs 22. The purpose of such separations (when used) is to permit independent functionality (i.e. flexure and compression) for ribs 22 in the longitudinal sections 41 thereof defined between pairs of laterally-extending separations 40. Such separations effectively provide extra dispersion of pressure applied by a user to curved support surface 12. For clarity, separations 40 are illustrated only over a portion of curved support surface 12, but of course may extend to cover the entire surface (or any portion) thereof. Separations 40 may be provided at various intervals along the longitudinal length of ribs 22, such as 2-3 inches (5-7.6 cm), or at even closer intervals if further dispersion of pressure is desired.

Figure 3 illustrates an inverted view of the Figure 2 embodiment, with relatively flat profile, convoluted support surface 14 turned upwardly for receipt and support of a user's head and neck. Again for clarity, only a portion of the projections 30 are illustrated which normally entirely cover support surface 14.

Figure 3 (as well as Figure 2) generally illustrates the differential height of prominent lobes 16 and 18 of the curved profile of curved support surface 12, as well as the presence of central trough 20. Because of the compression characteristics existent throughout foam pillow 10, support surface 14 when used in an upward support position will provide differential support to a user's head and neck supported thereon in a manner similar to that of surface 12 whenever it is turned upward, due to the predetermined, curved profile of surface 12 situated directly beneath surface 14. In other words, given a particular force applied at different points across support surface 14, the portion of surface 14 opposing relatively larger lobe 18 will be provided grater support than that part opposing lobe 16, which in turn is provided greater support than that part opposing central trough 20.

Figure 4 illustrates one preferred use of a pillow 10 constructed in accordance with features of the present invention. As discussed above, it is desirable to provide differential support for a user's head and neck. Such head and neck support may be obtained by a user 50 reclining on pillow 10 in an orientation generally as illustrated in Figure 4. The user's head rests chiefly in the central trough area 20 of curved support surface 12, with the user's neck being supported by one of lobes 16 or 18 of curved support surface 12. Both user 50 and pillow 10 may in turn be supported on a mattress 52 or the like.

While Figures 2 and 3 illustrate generally that pillow 10 of Figure 4 may be inverted from the illustrated disposition thereof, pillow 10 of Figure 4 may also or in the alternative be reversed so that an alternate lobe or maximum may be used to support the neck of user 50. The Figure 4 embodiment is disposed substantially as the Figure 1 illustration, with relatively lower lobe 16 shown on the left. Pillow 10 could be reversed so that relatively higher lobe 18 appeared on the left so as to support the neck of user 50 somewhat higher than as illustrated in present Figure 4. Such reversal permits adaptation of pillow 10 to different sizes and shapes of different users' heads and necks, or to vary the amount of support for a given user's head and neck. Whether reversed or inverted, pillow 10 provides no particular restriction on lateral head or neck movement, and causes no unpleasant pressures or forces on the user.

Other beneficial features are particularly associated with the plurality of parallel, longitudinal ribs 22, and their related channels 24. It is generally preferred that pillow 10 be used with a person's head and neck disposed perpendicularly to the longitudinal axis of the pillow (as shown in Figure 4). In such orientation, a user's head and neck may undergo various lateral movements, and channels 24 remain perpendicular to the user to efficiently function as dissipation means for removing heat and moisture away from the user's head and neck.

As referred to above, either by diffusion through the foam material comprising pillow 10, or by separation of adjacent ribs which enhances radial openings along the longitudinal axis of channels 24, air is permitted to enter such channels. Such air may carry with it body heat and moisture which is naturally generated by a user. Longitudinal channels 24 then carry such air along their longitudinal length to disperse same from the user and discarge such air from axial end openings thereof. Such air may also emerge from radial openings along such longitudinal length at portions thereof removed from the user's head and neck, or similarly be diffused from channels 24 at portions thereof removed from the user.

With or without the presence of optional lateral separations 40 in ribs 22, the radial openings in channels 24 are enhanced at the periphery of a user's head and neck by independent functionality of ribs 22 resulting in differential compression and flexure of adjacent ribs 22. As illustrated in Figure 4 with reference to particular channel 52, adjacent ribs 54 and 56 (which have relatively high differential force applied thereto by virtue of being located adjacent the periphery of the head of user 50) become separated at the "seam" of their adjoining diameters. Such seams are defined at circular edges of channel 52 meeting with adjacent diameters of ribs 54 and 56 (as illustrated by Figures 1 and 4). Separation of the contacting peripheral portions of adjacent ribs 54 and 56 expands radial opening 58 defined between such ribs. In other words, radial openings such as 58 may be formed by separating adjacent pairs of ribs along their mutual seams. Such opening and expansion further promotes the entry of air into channel 52, which heightens the dissipation function associated with such channels.

Enhanced radial openings 58 may be formed along virtually any pair of rib sections 41 located between separations 40 which are subjected to differential

forces, such as those present near the periphery of a user's head. Due to the independent functioning of longitudinal rib sections 41 between separations 40, sections 41 not subjected to differential pressure (such as those within ribs 54 and 56 but longitudinally beyond the user's head) normally remain relatively closed so that air within channel 52 is further conducted in an axial direction away from the user. Such functioning maximizes the dissipation distance of such air from the user's head and neck. Heat and moisture is dissipated from the user by virtue of being contained within or carried by such air which is dissipated by the longitudinal channels.

While the dissipation means formed by such longitudinal channels may have an enhanced effect near the periphery of the user's head, as discussed above, it is to be understood that air (including heat and moisture) may enter any of the channels 24 adjacent a user's head and neck by virtue of diffusion through adjacent ribs 22 (or some degree of radial opening in channels 24), for dissipation along such channels.

Combination of the foregoing features provides a pillow which enables the user to select from a plurality of use orientations to maximize comfort and proper support for his or her needs and tastes, while including the dissipation function (and all various features thereof) disclosed above.

While one preferred exemplary embodiment of the present invention including a best mode thereof has been disclosed for present purposes, various modifications and variations thereto will occur to those of ordinary skill in the art, including substitution of equivalents for and reversal of various features and elements thereof. All such modifications and substitutions may be made without departing from the spirit and scope of this invention. For example, different dimensional characteristics may be used in contrast with those specifically disclosed above. Further, various types of foam materials may be used, including different materials with various or varying compression characteristics selected for particular applications. A given pillow need not be limited to the illustrated curvature for its curved support surface, and the cross-sections of ribs 22 and channels 24 need not be limited to those shown.

Also, alternate use orientations are included features of the present invention. For example, a user's head may be longitudinally received in central trough 20 of curved support surface 12, with lobes 16 and 18 received on either lateral side of the user's head. In such disposition, air channels 24 are in parallel with the person's head and neck, instead of being perpendicular thereto as illustrated in Figure 4. However, even in such configuration, air channels 24 may perform the dissipation function described above. As a further variation, the presently disclosed pillow may be used with a loose fitting pillow slip, which due to such loose fitting would not affect any functions of the pillow itself as described above.

Claims

1. A pillow, for supporting a person's head and neck in a selected disposition, which is constructed essentially of foam materials and comprises:
a generally rectangular structure having longitudinal and lateral axes perpendicular to one another, and shorter along the lateral axis than along said longitudinal axis;
an upper support surface (12) defined on said structure and having longitudinal features forming a lateral profile, which profile includes two prominent lobes (16, 18) of differing heights and a trough (20) therebetween; and
a plurality of longitudinal ribs (22) having arcuate profiles, formed in the upper support surface (12) and defining the profile of the latter.

2. A pillow according to claim 1, further comprising a lower support surface (14) defined on said structure on a side thereof opposite the upper support surface (12), the lower support surface (14) being covered by a plurality of convolutions (30) together defining an essentially flat profile for the lower support surface; and
wherein the pillow (10) is adapted to receive a user's head adjacent the trough (20) with such user's neck adjacent one of the lobes (16 or 18), whereby the relative elevation and position of such user's head and neck may be adjusted by selecting which one of the lobes is disposed adjacent the user's neck.

3. A pillow according to claim 1 or claim 2, further comprising dissipation means (24) operatively associated with the upper support surface (12), for dissipating heat and moisture away from a user's head and neck when they are supported on the upper support surface.

4. A pillow according to claim 3, wherein the dissipation means comprises a plurality of parallel, general circular air channels (24) defined longitudinally in the upper support surface (12), and respectively disposed between adjacent ones of the longitudinal ribs (22).

5. A pillow according to claim 4, wherein the channels (24) include radial entries thereto and axial exits therefrom, through which head and moisture from a user's head and neck may respectively enter and exit.

6. A pillow according to claim 5, wherein the longitudinal ribs are adapted for substantially independent compression and flexure responsive to receipt and support of a user's head and neck thereon; resulting in differential compression and flexure of an adjacent pair of said ribs near the periphery of a user's head supported thereon, which enhances radial entry of heat and moisture into the channel (24) between such adjacent pair of ribs (22) by widening the radial entry of such channel.

7. A pillow according to any of claims 1 to 6,

further comprising a plurality of lateral separations (40) in the ribs (22) for providing independent flexing of portions of the ribs longitudinally defined between adjacent ones of such lateral separations (40), thereby offering additional dispersion of pressure for a user's head or neck received thereon.

8. A pillow according to any of claims 1 to 7, further comprising:
a flat, lower support surface defined on said structure on a side thereof opposite the upper support surface (12); and further including
an additive structure having generally the same composition and axes as said rectangular structure, and including a flat surface adapted to be secured to said flat, lower support surface of said rectangular structure and further including a convoluted surface (30) disposed on a side opposite the said flat surface of said additive structure; whereby,
whenever said structures are secured together at the flat surfaces thereof (at 32), only the upper support surface (12) of the rectangular structure and said convoluted surface (30) of said additive structure are faced outward for operative receipt and support of a user's head and neck.

9. A construction of resilient material for use as a head pillow comprising:
an integral member composed of the resilient material and having an upper support surface (12) of a predetermined profile;
a plurality of parallel, generally spherically-shaped ridges (22) formed on the support surface (12) and conforming to the said profile thereof; and
a plurality of parallel channels (24), defined by said upper support surface, and respectively interposed between adjacent ones of the ridges (22).

10. A construction according to claim 9, further comprising a lower support surface (14) for the integral member, on a side thereof opposite the upper support surface (12) and having a relatively flat profile defined by a plurality of convolutions (30) formed thereon; and wherein the predetermined profile of the upper support surface includes a changing curvature of alternating relatively raised areas (16, 18) and low areas (20).

11. A construction according to claim 10, wherein one of the low areas is respectively disposed near each of respective edges of the predetermined profile and one of said low areas (20) is near the center of the predetermined profile.

12. A construction according to claim 10, wherein radii of spherical ridges (22) which are relatively adjacent the raised areas (16, 18) generally are larger than the radii of spherical ridges which are relatively adjacent the said low areas.

13. A construction according to claim 9, wherein the parallel channels (24) have longitudinally extending radial openings defined by the parallel ridges (22) respectively adjacent thereto, and axial openings at respective ends of the channels; whereby heat and moisture from a user's head supported on the construction enter portions of the radial openings adjacent the user's head, and are dissipated therefrom out the axial openings and portions of the radial openings removed from the user's head.

14. A pillow for supporting the head and neck of a person situated in a generally horizontal position, the pillow comprising:
a generally planar, rectangular body of resilient material, having two main support surfaces (12, 14) on opposing sides thereof and being invertible between two positions for providing direct support of the head and neck of a user on a selected one of the support surfaces of the body;
scalloping (22) in rows, with spherical air channels (24) defined therebetween, disposed on a given one (12) of the support surfaces; and convolutions (30) defined on the other one (14) of the support surfaces.

15. A pillow according to claim 14, wherein the convolutions (30) together define a substantially flat profile; and
the scalloping defines a curved profile for the associated support surface (12), the cross-section of which includes two maxima (16, 18) of differing heights and at least one minimum (20) situated between said maxima;
whereby, in either of said two invertible positions, the pillow (10) is adapted for either said flat profile or said curved profile to support the head of a user substantially adjacent the said minimum (20), and with the neck of such user substantially adjacent a selected one of said maxima (16, 18), the selection of which determines the relative elevation and position of the user's head and neck.

16. A pillow according to claim 15, wherein said scalloping comprises a plurality of rounded ridges (22) having diameters which vary across the curved profile, which diameters are generally larger adjacent the maxima (16, 18) than adjacent the minimum (20).

17. A pillow according to claim 16, wherein the rectangular body is approximately 40 centimeters wide by 52 centimeters long; at said maxima (18, 16) the body is about 12 centimeters and 10.5 centimeters thick respectively, and is about 8.5 centimeters thick at the minimum (20); and the ridge diameters vary approximately in a range between 2 to 3 centimeters.

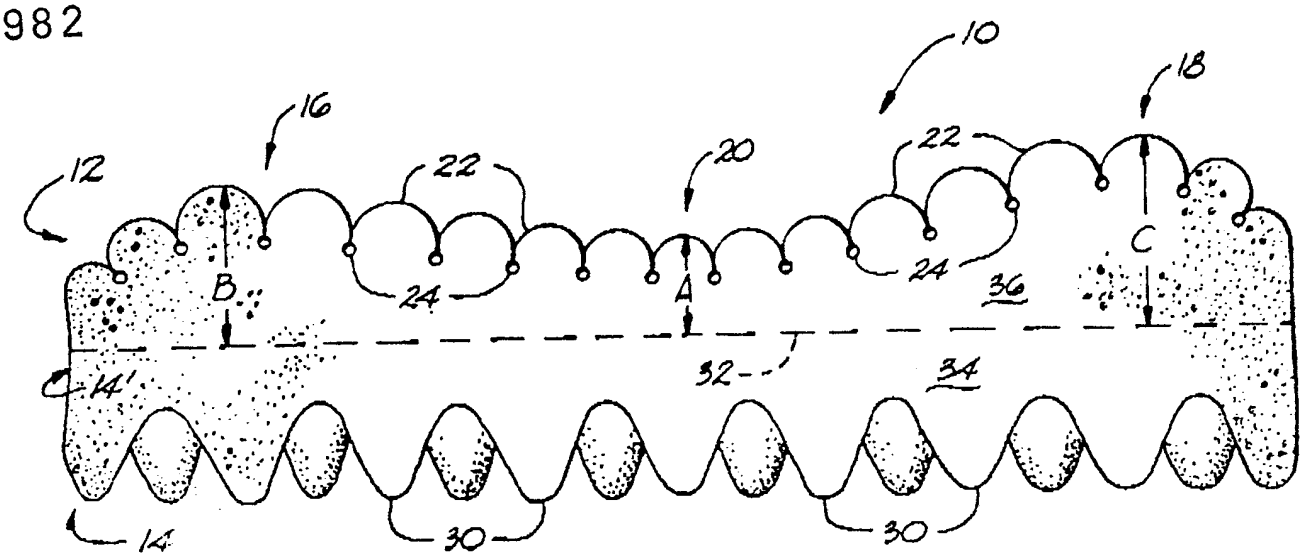
10
16
18
12
22
20
22
C
B
A
24
24
36
14'
32
34
14
30
30

Fig. 1

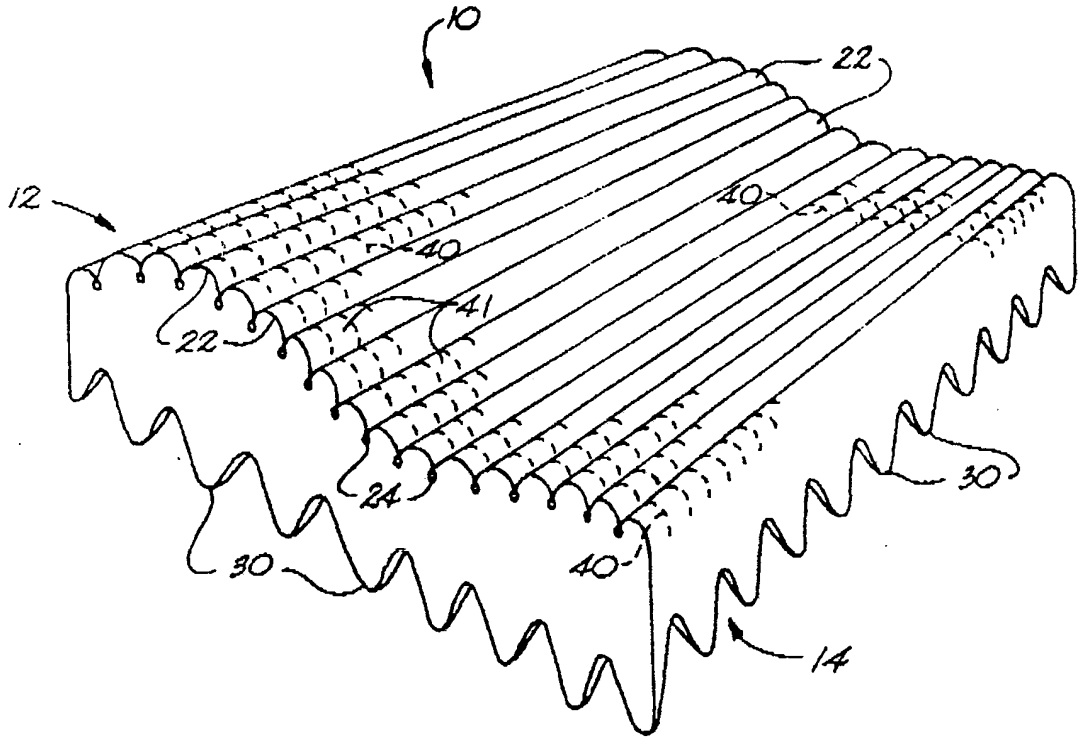
10
22
12
40
40
41
22
24
30
30
40
14

Fig. 2

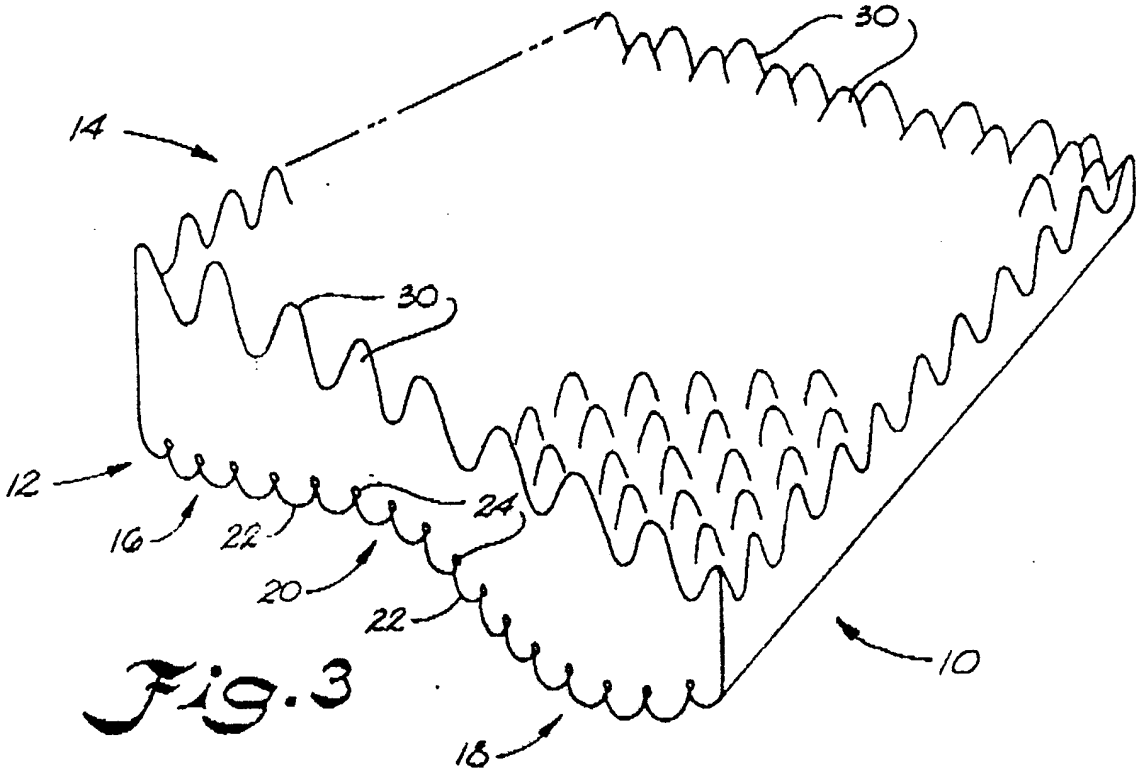

Fig. 3

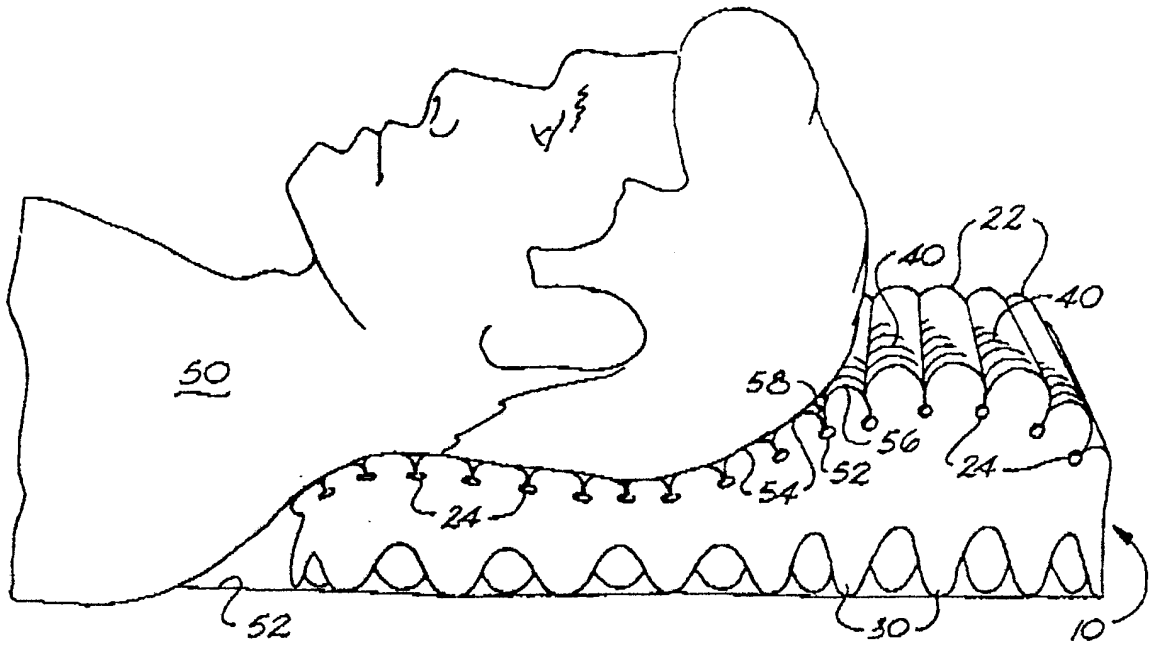

Fig. 4

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 87 30 7361

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
Y,D	US-A-3 829 917 (DE LAITTRE et al.) * Figure 1 *	1,9,14	A 47 G 9/00
A		2,10,11,15	
Y	GB-A-1 559 851 (EVANS) * Figure 4; page 3, lines 18-52 *	1,9,14	
A		6-8	
Y	CH-A- 604 626 (HOCHSTRASSER) * Whole document *	14	
A		2,10	
A	CH-A- 571 845 (RIPOSE) * Column 1, lines 28-43 *	1,3-7,9,13,14	
A,D	US-A-4 320 543 (DIXON) * Figures 1,2 *	1-3,8-11	

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

A 47 G
A 47 C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	24-11-1987	BEUGELING G.L.H.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P0401)